



**ACCREDITED TRAINING FOR THE NATIONAL
REGISTRY OF CERTIFIED MEDICAL
EXAMINERS**

MODULE 2

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TeamCME Chief Medical Officer



Welcome to Module 2 of the Accredited Training for the National Registry of Certified Medical Examiners.



THE VISION STANDARD



Driver Vision History

Driver History: Eye disorders or impaired vision (without corrective lenses)

- Ask if any changes, diagnosis, glare, any near crashes (indications of beginning eye conditions)
- Any symptoms related to or cause by eye disease, tolerance to contacts
 - burning, irritation, itching, blurring, night vision
- Any history of Macular Degeneration, Aphakia, Glaucoma, Cataracts, Retinopathy

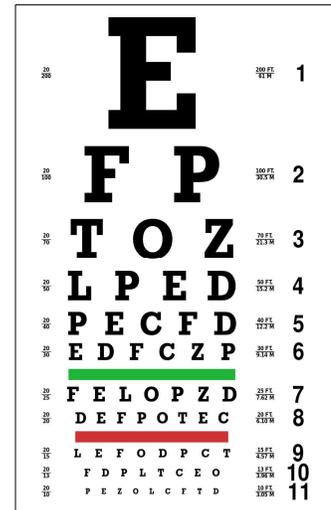


The medical examiner should perform a quick review of the driver's vision history. Ask if there has been any recent vision changes, increased glare, or near crashes. Also ask regarding any history of macular degeneration, loss of lens, glaucoma, cataracts, or retinopathy.

FMCSA VISION STANDARD

Drivers must meet the standard in each eye and when using both eyes. (with or without corrective lenses)

- Distant visual acuity of at least 20/40
- Field of vision of at least 70 degrees in the horizontal meridian
- Be able to recognize the colors of traffic signals and devices showing standard green, red and amber
- No double vision
- When corrective lenses are used to meet the requirements, corrective lenses must be used while driving
- Drivers with insulin-treated diabetes mellitus that have either severe non-proliferative diabetic retinopathy or proliferative diabetic retinopathy cannot be certified



Both eyes should always be tested, and the findings recorded on the report form. The driver must meet the standard in each eye and in both eyes. For distance acuity, each eye must have 20/40 vision, with or without corrective lenses. For field of vision, otherwise known as peripheral vision, each eye must have a minimum of 70 degrees of vision in the horizontal meridian. Drivers must also be able to distinguish between traffic signal green, red, and amber. Drivers cannot be experiencing double vision. If corrective lenses are used to meet the requirements, they must be worn while driving. Also, drivers with insulin-treated diabetes mellitus who have either severe non-proliferative diabetic retinopathy or proliferative diabetic retinopathy cannot be certified.

Color Perception Guideline



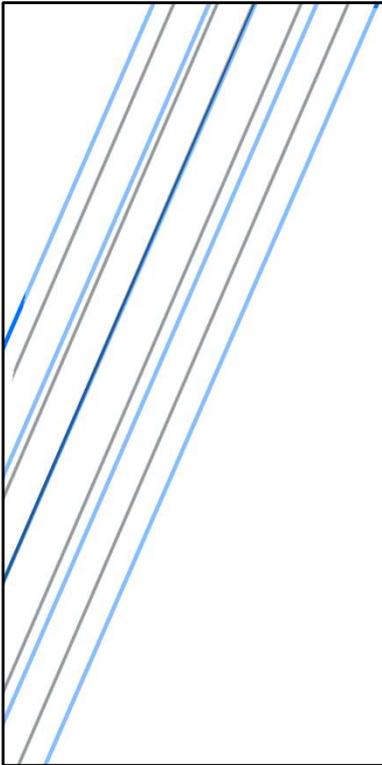
Drivers must be able to recognize the colors of the traffic signal

“The term ‘ability to recognize the colors of’ is interpreted to mean if the driver can recognize standard red, green and amber, the driver meets the minimum standard, even though they may have some type of color perception deficiency.”

Color perception may be evaluated using a controlled test using standard **Red, Green** and **Amber**

True color perception is not required!

Drivers are rarely disqualified for color blindness as true color perception is not required. Drivers only need to be able to differentiate between traffic signal red, green, and amber. Drivers often relate that the green colored card has the appearance of dark gray. Other tests are designed to make it difficult to differentiate between colors.



When asked to differentiate traffic signal green, red, and amber using colored cards, the driver can differentiate which color is which, but reports that the red card appears “greenish grey” and green card appears “gray-ish”. What is the next step?

- A. Disqualify the driver
- B. Certify the driver for 2 years
- C. Refer the driver to a vision specialist for color deficiency evaluation
- D. Take the driver to a traffic signal to verify passage of the vision standard

The correct answer is **B**. To pass the color vision standard, drivers are only required to differentiate traffic signal green, red, and amber. It does not matter what color they actually report seeing.

When asked to differentiate traffic signal green, red, and amber using colored cards, the driver can differentiate which color is which, but reports that the red card appears “greenish grey” and green card appears “gray-ish”. What is the next step?

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- D. Take the driver to a traffic signal to verify passage of the vision standard

The correct answer is **B**. To pass the color vision standard, drivers are only required to differentiate traffic signal green, red, and amber. It does not matter what color they actually report seeing.

TESTING VISUAL ACUITY



- A trained office assistive may perform the vision screening test and record results
- Use the Snellen chart at 20 feet, illuminated with white light, or use a Titmus Vision Tester
- Ask the driver which line has the smallest lettering they can read. Note smallest line that driver can read while missing only one letter. (Could be reported at 20/40-1)
- Driver should keep both eyes open when using an eye occluder to test each eye individually
- Some drivers who wear corrective lenses may pass without their lenses
- Drivers wearing contacts must carry a spare set of glasses while driving

The test for visual acuity evaluates for distance vision. Medical examiners must use the Snellen chart at a distance of 20 feet, illuminated by a white light for better visualization, or they may use a Titmus Vision Tester. Results must be reported in Snellen values. Trained assistants can perform this portion of the exam in the medical examiner's office. Drivers that use corrective lenses for driving should wear their lenses for testing. However, if a driver with glasses can pass the test without using their glasses, the driver is not required to wear glasses when driving. Drivers that require corrective lenses to drive can use either glasses or contacts. If using contacts, the driver should be advised that they are required to carry a spare set of glasses while driving.

Start the test by asking the driver which line has the smallest lettering they can read or simply start at the 20/20 line. Instruct the driver to keep both eyes open, even when covering one eye with an eye occluder. The driver's acuity is measured as the smallest lettered line they can read without missing more than one letter. Because some drivers have memorized the Snellen chart, consider asking drivers to read lines forwards and backwards. If they are reading the 20/20 line and miss one letter, it is recorded as 20/20-1. Drivers meet the vision acuity standard if their vision is 20/40-1 or better.

Drivers that have 20/50 vision in the medical examiner's office may have better acuity when measured by more precise equipment in an optometrist or ophthalmologist office. If a driver fails the acuity standard in both eyes, they are not allowed to drive until they have corrective

lenses that allow them to meet the standard.

FIELD OF VISION TEST

Sit approximately two feet in front of the driver

Instructions for testing the left eye:

- Driver uses the palm of the right hand to cover the right eye
- Ask the driver to fixate on your left eye
- Extend your arms forward and position your hands halfway between yourself and the driver
- Position your right hand one foot to the right of the straight-ahead axis and six inches above the horizontal plane
- Position your left hand one-and-a-half feet to the left of the straight-ahead axis and six inches above the horizontal plane
- Ask the driver to confirm when a moving finger is detected
- Repeat the procedure with your hands positioned six inches below the horizontal meridian

Reverse the process for the right eye



The FMCSA supports the confrontation method for determining a driver's field of vision. The same process is performed in both eyes, but I will explain the process for testing the left eye. Sitting approximately two feet in front of the driver, ask them to cover the right eye and fixate on the medical examiner's left eye. Position both hands halfway between yourself and the driver, and about 6 inches above the horizontal plane. The right hand should be placed one foot to the right of the straight-ahead axis and the left hand should be placed one-and-a-half feet to the left of the straight-ahead axis. While keeping the hands in the same plane (halfway between you and the driver), move one hand at a time farther in or out until the driver confirms the moving finger is detected. The total angle created between the two fingers from the straight-ahead axis is recorded and the same process is performed on the other eye.

There are other acceptable methods of determining field of vision. One example is having the driver look forward while slowly bringing a pen light forward from behind the eye. If the medical examiner determines that the test results are inconclusive, a specialist evaluation should be obtained.

OCCULAR MOTILITY, ACCOMMODATION, CONVERGENCE



Driver's eye follows the examiner's penlight movement through the "H" pattern, then focuses on the penlight when moved close and distant.

Motility: Evaluates the extraocular muscles and their impact on eye movement

Accommodation: The ability of the eye to change its focus from distant to near objects

Convergence: Turning inwards of the eyes in order to fixate an object or image that is closer than the previous fixation point

Ocular motility and extra-ocular movement can be evaluated using the typical H pattern and pen light. Accommodation consists the ability of the eye to change its focus from distant to near objects while convergence is the turning inwards of the eyes in order to fixate an object or image that is closer than the previous fixation point.

MONOVISION VS MONOCULAR VISION

Monovision:

- Disqualifying
- Issues with depth perception
- One eye nearsighted, the other farsighted
- Lasik surgery or corrective lenses for distance acuity in one eye and near acuity in the other

Can be resolved by having corrective lenses that create distance acuity in both eyes.

Monocular Vision:

- One eye does not meet the vision requirements

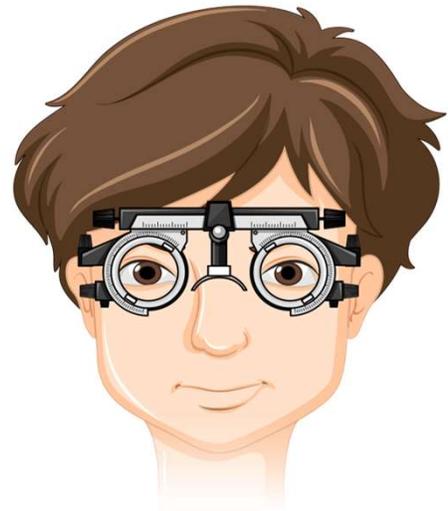


Monovision is the result of using a corrective lens in one eye for far vision, and one in the other eye for near vision. An individual may also have Lasik surgery to obtain the same result. Monovision is not acceptable as very few drivers can meet the distance vision standard when using this type of corrective lenses. This issue is generally circumvented by having the driver acquire new corrective lenses that allow for distance vision in both eyes. Monocular vision is defined as drivers who only meet the vision standard on one eye. This will be discussed in greater detail later.

TELESCOPIC LENSES

Telescopic lenses:

- Disqualifying
- Significantly decreased field of vision
- Used for uncorrectable low for macular degeneration, tunnel vision from glaucoma, retinal detachment, diabetic retinopathy



Telescopic lenses are used for certain eye conditions and are not allowed as they significantly decrease the drivers overall field of vision.

EYE PROFESSIONAL DOCUMENTATION

Vision
Standard is at least 20/40 acuity (Snellen) in each eye with or without correction. At least 70° field of vision in horizontal meridian measured in each eye. The use of corrective lenses should be noted on the Medical Examiner's Certificate.

Acuity	Uncorrected	Corrected	Horizontal Field of Vision
Right Eye:	20/ <input type="text"/>	20/ <input type="text"/>	Right Eye: <input type="text"/> degrees
Left Eye:	20/ <input type="text"/>	20/ <input type="text"/>	Left Eye: <input type="text"/> degrees
Both Eyes:	20/ <input type="text"/>	20/ <input type="text"/>	

Applicant can recognize and distinguish among traffic control signals and devices showing red, green, and amber colors Yes No

Monocular vision Yes No

Referred to ophthalmologist or optometrist? Yes No

Received documentation from ophthalmologist or optometrist? Yes No

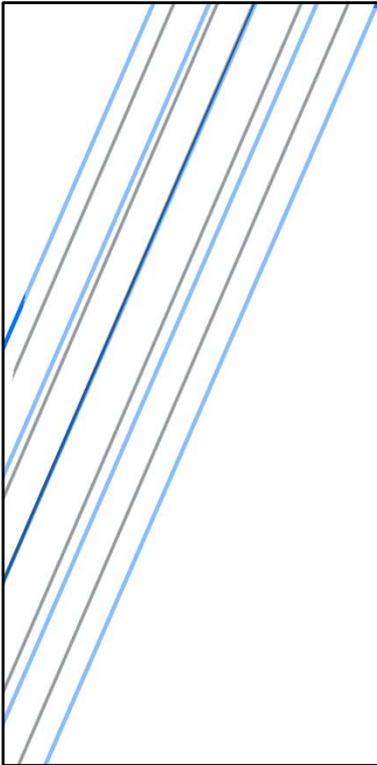
Vision evaluation can be performed by an ophthalmologist or optometrist

When receiving a report from an eye specialist, check the box for the referral and copy results onto the form or attach received reports.

Professional vision exams often report the findings using Latin abbreviations:

- OD = Right Eye
- OS = Left Eye
- OU = Both Eyes

If a driver is referred to an optometrist or ophthalmologist for evaluation, the medical examiner should mark the “referred to ophthalmologist or optometrist” box and if a report is received, the “received documentation” circle should be checked. The medical examiner should attach the information received to the medical examination report form.



A driver has the following visual measurements during re-certification:

Distant Visual Acuity: OD: 20/40 OS: 20/60
Horizontal Lateral Vision: OD: 50 OS: 90

What is the next best step?

- A. Disqualify the driver
- B. Qualify the driver for two years
- C. Complete the exam and refer the driver to an eye specialist for a Vision Evaluation Report
- D. Place the driver in Determination Pending status and refer to a vision specialist

The correct answer is **A**. The driver is disqualified because they do not meet the vision standard in either eye, and therefore is not eligible to have a Vision Evaluation Report completed for monocular vision. The CME should know the vision requirements for intrastate only drivers in case their state has lower standards or their own State vision waiver/exemption program that would allow the driver to drive only within their state.

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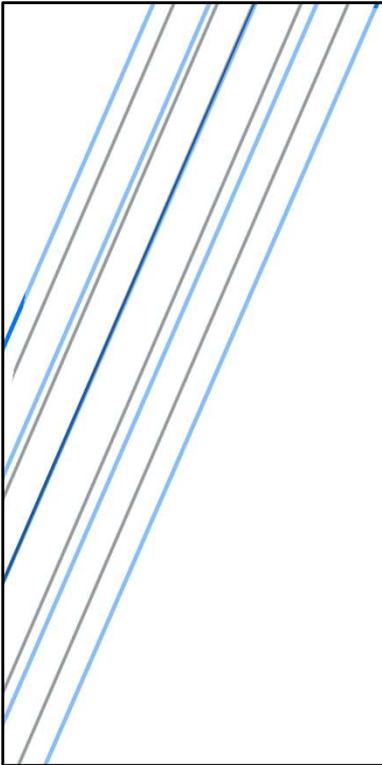


FAILURE TO MEET VISION STANDARD

If an individual fails the screening examination, they must be disqualified. The individual has the option of seeing a specialist, and then can undergo a new physical qualification examination.

The ME should instruct the individual to have the specialist complete the Vision Evaluation Report, Form MCSA-5871, if it appears likely that the individual will be physically qualified under the alternative vision standard.

If an individual fails the screening examination, they must be disqualified. The individual has the option of seeing a specialist, and then can undergo a new physical qualification examination. The ME should instruct the individual to have the specialist complete the Vision Evaluation Report, Form MCSA-5871, if it appears likely that the individual will be physically qualified under the alternative vision standard.



ALTERNATIVE VISION STANDARD: STEPS TO TAKE FOR MONOCULAR VISION

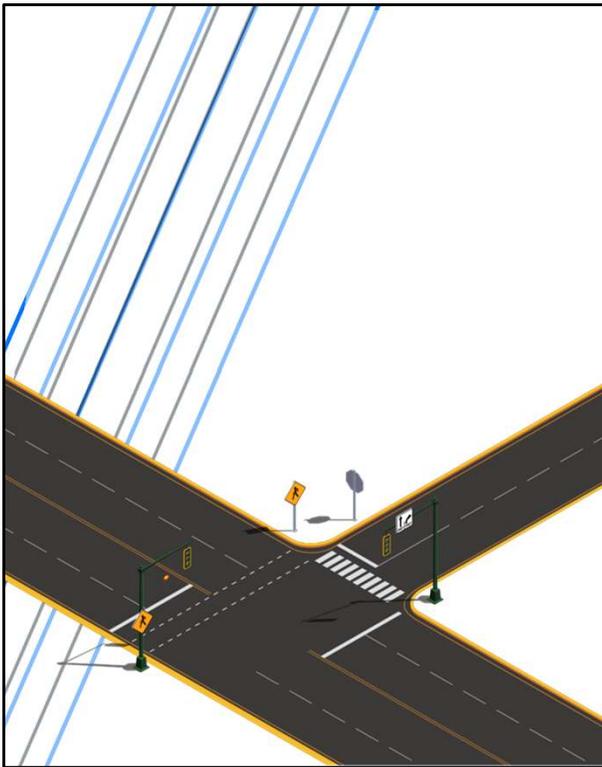
The same vision standards still apply... but only for one eye

- The vision deficiency must be stable
- Once a medical professional has deemed the vision deficiency to be stable, there must be a period for the individual to adapt to and compensate for the change in vision

First Step

- A **Vision Evaluation Report (Form MCSA-5871)** must be completed by an **ophthalmologist or optometrist** PRIOR to being certified
 - The report is only valid for 45 days

With the alternative vision standard, drivers who only meet the requirements in one eye, with or without corrective lenses, are permitted to operate a commercial motor vehicle in interstate commerce. However, there are still necessary steps to complete before being medically certified to drive. First, the driver is required to have a Vision Evaluation Report form (MCSA-5871) filled out by an ophthalmologist or optometrist prior to the ME completing the physical exam. The questions are designed to verify the diagnosis and the degree of deficit of the affected eye(s). One of the questions asked to the eye professional is if the vision deficiency is stable. If a driver has sustained an injury or has a condition that has caused an abrupt change in their vision, there must be a period of time to allow that individual to adapt and compensate for this change.



ALTERNATIVE VISION STANDARD: STEPS TO TAKE FOR MONOCULAR VISION

The Final Step: Road Test

- The first time an individual is qualified under this alternate standard, they must satisfactorily **complete a road test** administered by the employing motor carrier
 - Can also be performed by a CDL driving school

The test is conducted in accordance with the road test already required by §391.31

This does not apply to individuals who:

- Have 3 years of intrastate or specific excepted interstate CMV driving experience with the vision deficiency

The first time an individual with monocular vision is medically certified under this alternate standard, they must complete a road test administered by the driver's employer. Most self-employed, owner/operator drivers have contracts with larger companies, and they can use them for the road test. Drivers may also turn to a CDL driving school to perform this test. Individuals that have 3 years of intrastate driving experience are not required to complete the road test.

WHEN TO REFER FOR OCCULAR CONDITIONS

Should a driver with macular degeneration, glaucoma, cataracts or retinopathy be disqualified from driving?

- Having one of these visual conditions does not in itself disqualify a driver
- Due to the progressive nature of some of these conditions, the medical examiner may consider issuing a medical certificate for less than two years
- The medical examiner may decide to refer the driver to a vision specialist



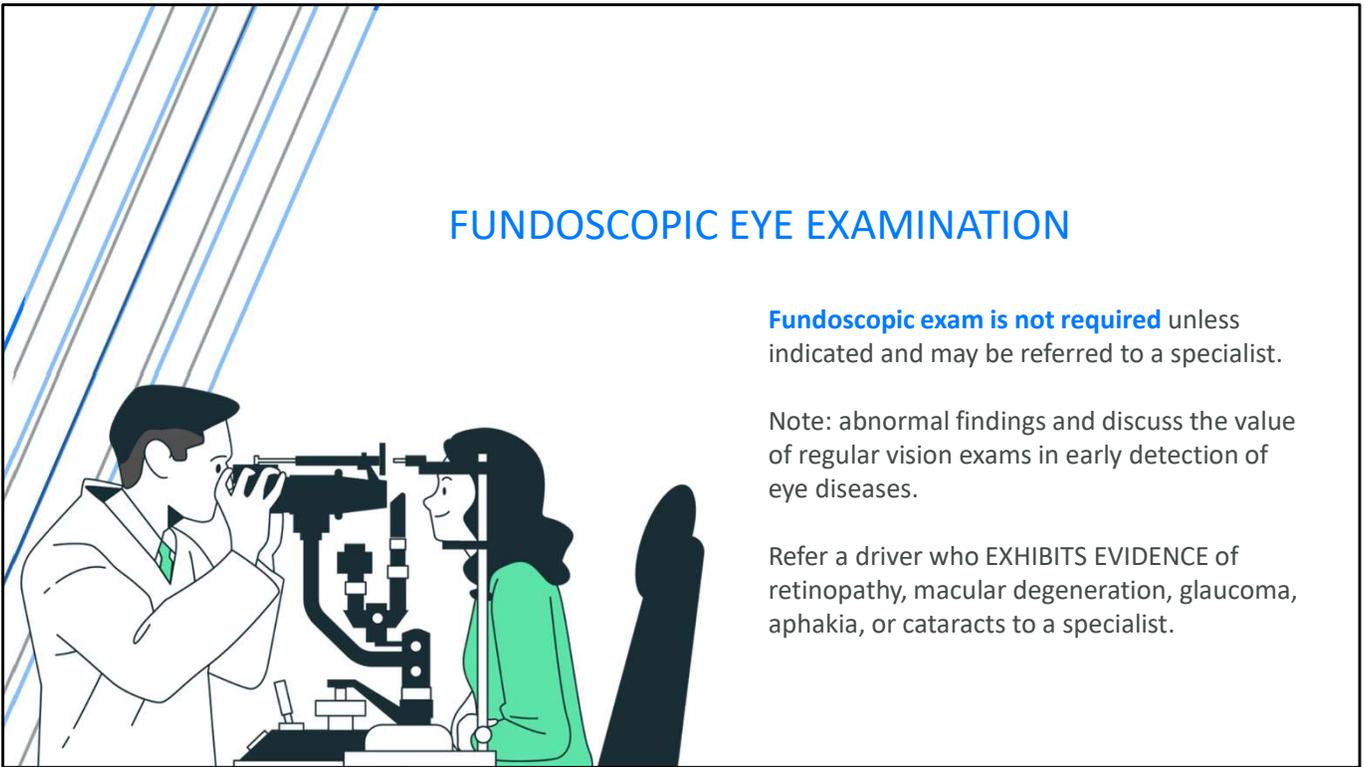
When the medical examiner discovers that a driver has a vision condition, the medical examiner may decide to refer the driver to a vision specialist for evaluation. An important recurring question is whether a driver with macular degeneration, glaucoma, cataracts or retinopathy should be disqualified from driving? Having one of these visual conditions does not in itself disqualify a driver. However, due to the progressive nature of some of these conditions, the medical examiner may consider issuing a medical certificate for less than two years.

FUNDOSCOPIC EYE EXAMINATION

Fundoscopy exam is not required unless indicated and may be referred to a specialist.

Note: abnormal findings and discuss the value of regular vision exams in early detection of eye diseases.

Refer a driver who EXHIBITS EVIDENCE of retinopathy, macular degeneration, glaucoma, aphakia, or cataracts to a specialist.



A fundoscopic exam is not required but if during the performance of the physical exam, the examiner feels it is indicated, the medical examiner should either perform a fundoscopic exam or refer the driver to a specialist. If a fundoscopic exam is performed in-office and the exam findings are suggestive of a vision condition that may affect the ability of the driver to safely drive, the driver should be referred to a specialist.

ANISOCORIA, HORNER'S SYNDROME, & CRANIAL NERVE III (CN3) PALSY

Anisocoria: Pupils that are different sizes at the same time. Can be normal (physiologic) or a sign of an underlying medical condition.

- Physiologic anisocoria: Pupil size difference does not exceed 1mm and **does not change under bright or dim light**
- Underlying medical condition:
 - Injured iris
 - Eyedrops, nasal sprays, other meds cause dilation of pupil
 - Inflammation and Horner's syndrome can result in small pupil

Horner's Syndrome: Caused by injury to the sympathetic nerves responsible for dilating the pupil and raising the eyelid on the same side of the face.

- **The pupil in the involved eye is smaller and does not get bigger (dilate) as well as the other eye.**
- The difference in pupil size between the two eyes is more noticeable under dim light.
- May have mild droopiness (ptosis) of the upper eyelid

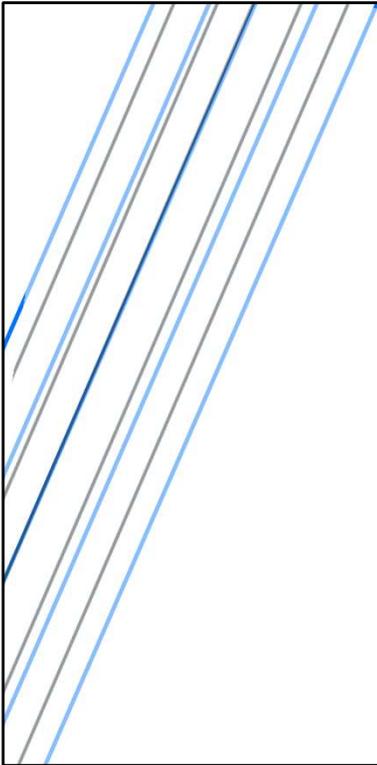
CN3 Palsy:

- A complete palsy causes a closed eyelid and deviation of the eye outward and downward and usually have double vision (diplopia). **The pupil is typically enlarged and does not react normally to light.**
- Ptosis of the eyelid or an enlarged pupil may be the first sign of a third nerve palsy

Three conditions that have similarities in presentation are anisocoria, Horner's Syndrome, and palsy of the third cranial nerve (CN3 palsy). Anisocoria is when pupils are different sizes at the same time. This can be normal (physiologic) or a sign of an underlying medical condition. With physiologic anisocoria, the pupil size difference does not exceed 1mm and does not change under bright or dim light. Medical conditions that may cause anisocoria include an injured iris, eyedrops, nasal sprays, other meds that cause dilation of pupil, inflammation, and Horner's syndrome.

Horner's Syndrome is caused by injury to the sympathetic nerves responsible for dilating the pupil and raising the eyelid on the same side of the face. The pupil in the involved eye is smaller and does not get bigger (dilate) as well as the other eye. The difference in pupil size between the two eyes is more noticeable under dim light. They may also have mild droopiness (ptosis) of the upper eyelid.

Symptoms of CN3 Palsy depend on the amount of the nerve that is affected. A complete palsy causes a closed eyelid and deviation of the eye outward and downward and usually have double vision (diplopia). The pupil is typically enlarged and does not react normally to light. Ptosis of the eyelid or an enlarged pupil may be the first sign of a third nerve palsy.



Checking for pupillary equality is a required part of the examination. On a driver's exam, you notice that the pupils are of different diameters, and neither pupil reacts to light. This is consistent with:

- A. Horner's syndrome
- B. Anisocoria
- C. 3rd Cranial Nerve Palsy (CN3 palsy)
- D. Glaucoma

The correct answer is **B**. This scenario describes anisocoria. With both Horner's syndrome and CN3 palsy, the affected pupil does not react normally to light but there is still some reaction. With glaucoma, the pupils are not of different diameters.

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CATARACTS

- Blurry vision at any distance in all fields
- Glare, particularly at night from oncoming headlights
- Decreased contrast and color resolution
- Accelerated by smoking, diabetes, gout, injury, radiation, and steroid medications
- Surgery involves replacement of the lens (aphakia)
- “Cat Eye” reflection from otoscope
- Close vision may be improved temporarily
- Appear as white obstruction in pupil area



The hallmark of cataracts is decreased visual acuity in all visual fields. Cataracts are generally slowly progressive but may be accelerated by smoking, injury, radiation treatment, gout, steroid medications, and diabetes. Vision affected by glare, particularly at night in the face of oncoming headlights may be an early sign. Decreased acuity, contrast, glare and color resolution are compounded by the light scattering effect of cataracts. Cataracts appear as a white obstruction in the pupil area. Surgery involves removal and replacement of the lens, called aphakia. It is easy to detect drivers who have had cataract surgery. When light is shined into the eye, there is a reflective shine referred to as a Cat-Eye reflection. Close vision may be improved temporarily.

GLAUCOMA



- Decreased peripheral vision
- Decreased night vision and color vision
- Lost vision cannot be restored
- Painless and progressive
- Acuity may not be affected and will probably not be detected by vision acuity testing
- Advise strict compliance with medications is required for effective treatment

Glaucoma results in loss of peripheral vision. It's painless and progressive. Night vision and color resolution may also be decreased. Glaucoma, if left untreated, will eventually lead to disqualification from commercial driving. Because central vision is not affected, testing for visual acuity may not indicate the presence of glaucoma. Drivers should be informed that strict compliance with their treatment plan. Some medications used for treatment of glaucoma could be a risk for safe driving.

MACULAR DEGENERATION

- Loss of detailed **central vision**
- Slowly progressive
- Peripheral vision usually spared
- Decreased central visual acuity
- Increased time required for recovery from bright lights
- 30% prevalence in population after age of 70
- **Telescopic lenses redirect central images to areas of the eye for peripheral vision but is not acceptable for commercial driving**



Macular degeneration decreases central vision acuity while peripheral vision is usually spared. The recovery time from bright lights such as from oncoming headlights at night may increase. Macular degeneration is slowly progressive and is generally associated with older drivers. The use of telescopic lenses helps to redirect the images associated with central vision to the areas associated with peripheral vision. The result is an overall decrease in the total vision field. For this reason, driving with telescopic lenses is not acceptable for commercial driving.

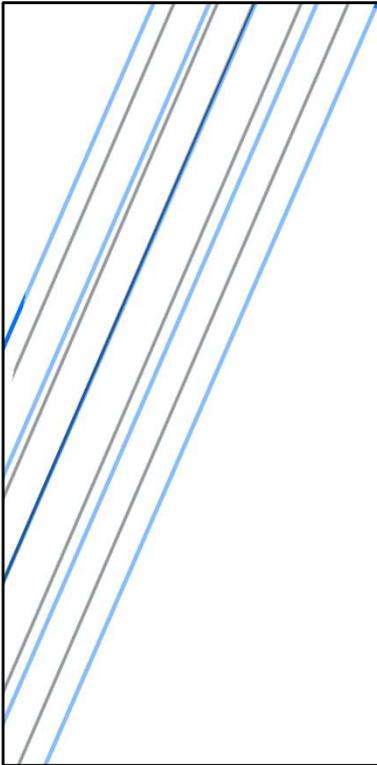
RETINOPATHY



- Micro-aneurisms or hemorrhages causing **vision loss in any part of the field of vision**
- Can obscure vision, cause retinal detachment and blindness
- Fluid leakage can lead to blind spots in central vision
- Diabetes is the most common cause (Diabetic Retinopathy)
 - Contrast sensitivity
 - Flicker fusion frequency
 - Decreased color discrimination
- *For insulin-treated diabetics, Proliferative Diabetic Retinopathy and Severe Non-proliferative Diabetic Retinopathy are permanently disqualifying*
 - At risk of sudden loss of vision from a detached retina or bleeding
 - Treatment adversely impacts night and peripheral vision

Retinopathy is caused by micro-aneurisms and hemorrhage that cause visual loss in any area of the field of vision. Gross hemorrhage may obscure vision and lead to retinal detachment and blindness. Fluid leakage can lead to blind spots in central vision. Diabetes is the most common cause of retinopathy, known as Diabetic Retinopathy, has subtle changes in contrast, color discrimination and flicker fusion frequency.

For insulin-treated diabetics, the diagnoses of proliferative *Diabetic* retinopathy and severe non-proliferative *Diabetic* retinopathy are disqualifying. These individuals are at risk of sudden loss of vision from a detached retina or bleeding. Treatment adversely impacts night and peripheral vision.

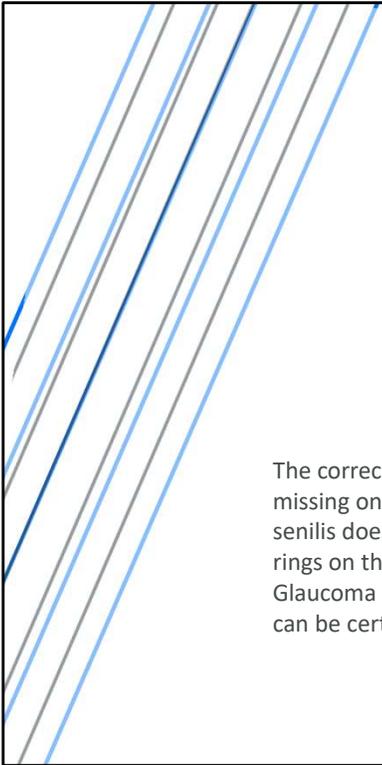


XANTHOPSIA

A dominantly yellow bias in vision due to a yellowing of the optical media of the eye

- Predominantly caused by digoxin (derived from digitalis) which is used to treat arrhythmias

Xanthopsia is a dominantly yellow bias in vision due to a yellowing of the optical media of the eye. It is predominantly caused by digoxin, derived from digitalis, which is used to treat arrhythmias.



Which of the following eye conditions is of most concern?

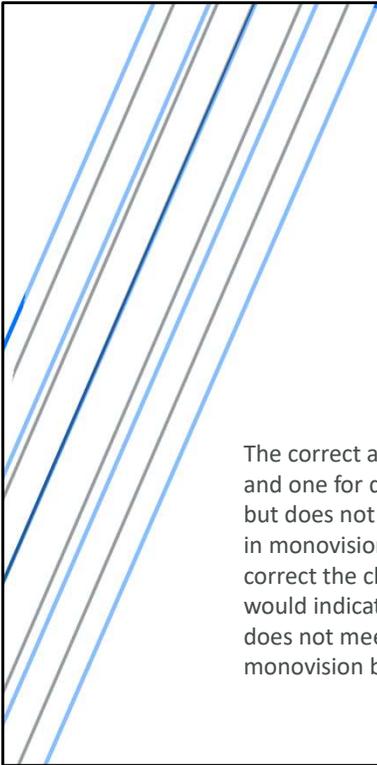
- A. The driver is missing one eye
- B. Arcus Senilis
- C. Diabetic proliferative retinopathy
- D. Glaucoma

The correct answer is **C**. Diabetic proliferative retinopathy is a disqualifying condition. A driver missing one eye may meet the alternate vision standard if they pass in the eye they have. Arcus senilis doesn't affect vision, nor does it require treatment. It is lipid deposits that appear as rings on the outer region of the cornea. They are usually gray or white and are usually opaque. Glaucoma affects peripheral vision which may require more frequent monitoring, but drivers can be certified if they meet the vision standard.

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- B. Arcus Senilis
- C. Diabetic proliferative retinopathy
- D. Glaucoma

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All the following eye conditions may require the medical examiner to seek specialist evaluation except?

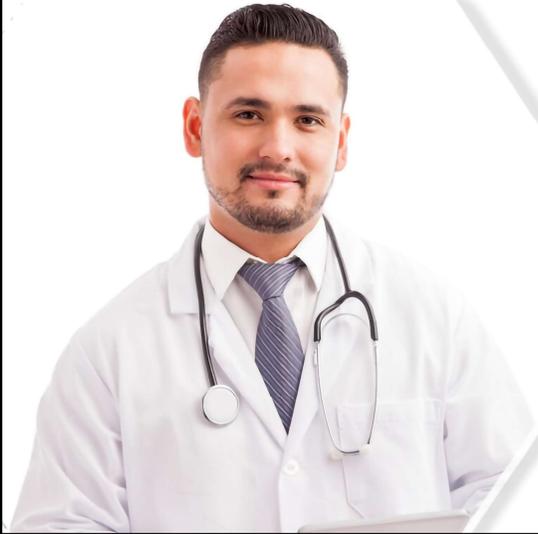
- A. Glaucoma
- B. Monovision
- C. Cataracts
- D. Macular Degeneration

The correct answer is B. Monovision is not an eye condition. It is the use of one contact for near vision and one for distance vision or was purposely done during Lasik surgery. Monovision is disqualifying but does not require a specialist evaluation. Drivers that had Lasik or other eye procedures resulting in monovision in distance vision correction in one eye could be certified if they can use lenses to correct the close vision eye to 20/40 distance vision. If this were the case, the MEC for these drivers would indicate that they must wear lenses. Monocular vision is the term used to indicate that one eye does not meet the vision standard. If the monovision is corrected, the ME would not mark the monovision box.

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- C. Cataracts
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THE HEARING STANDARD

Hearing: 49 CFR391.41(b)(11) Non-Discretionary

Medical Examiners must follow the hearing standards!

Drivers must meet the hearing requirements in at least one ear
(with or without hearing aides) to pass the hearing standard.

Whisper Test and/or Audiometric test - Either One is Accepted

- If the driver fails the initial test, conduct the other test!
 - Record both test results on exam report form
- If the driver failed the whisper test, and audiometric testing is not available, the driver must be disqualified until results of the audiometric test are presented
 - A new physical exam must be completed
- If the driver fails both tests, a federal hearing exemption is available that will allow even completely deaf individuals to drive a CMV across state lines

The hearing standard for commercial drivers is one of two non-discretionary standards, which means that the medical examiner cannot deviate from the standard's requirements. A driver needs to meet the hearing standard in only one ear, with or without the use of hearing aids. To meet the hearing requirements, the driver must pass either the whisper test or the audiometric test, although some motor carriers require that audiometric testing be performed. Either test can be completed with or without the use of hearing aides and must be performed on both ears. If the driver fails whichever test was performed, the other test must be conducted. If the driver failed the whisper test, and audiometric testing is not available, the driver must be disqualified until results of the audiometric test are presented. At that point, a new physical exam must be completed. If the driver fails both tests, a federal hearing exemption is available that will allow even completely deaf individuals to drive a CMV across state lines.

WHISPER TEST

- 5-15 feet away
- The examiner stands behind or to the side of the driver to avoid visual cues
- The driver covers the opposite ear
- Using breath remaining following normal expiration, whisper words or random numbers
 - Avoid nasal and “S” sounds such as nines and sixes
- Record the distance in feet at which the whispered voice can first be repeated by the driver



For simplicity, most medical examiners choose to use the whisper test. One ear must perceive a whispered voice from no less than 5 feet. This is done by standing to the side of the driver and having the driver cover the opposite ear with their hand, then whispering either numbers or words with the force of breath available at the time the medical examiner would normally take a breath at the end of a sentence. The sound is generally louder than what most would consider to be a whisper. Do not use words or numbers containing “S” or nasal sounds such as seven or nine as these are more difficult to hear. Record the farthest distance in feet at which the whisper can first be repeated by the driver.

AUDIOMETRIC TESTING



- Values to consider: **500Hz, 1000Hz, and 2000Hz**
- Calculate the sum of the readings, then divide by 3
- The average hearing loss must be **≤40dB in the better ear**
- **If the driver must use hearing aids, an “Open Field” audiometric test must be administered**
- Device should be calibrated to **American National Standard Institute (ANSI)** units

Example:

Right Ear

500Hz	1000Hz	2000Hz
35dB	40dB	50dB

$$125\text{dB} / 3 = 41.66\text{dB}$$

This Ear Fails

Left Ear

500Hz	1000Hz	2000Hz
35dB	40dB	45dB

$$120\text{dB} / 3 = 40\text{dB}$$

This Ear Passes

The audiometric device should be calibrated to American National Standard Institute (ANSI) units. A driver cannot have more than an **average hearing loss** in one ear of less than or equal to 40dB at the 500Hz, 1000Hz, and 2000Hz frequencies. When calculating the average hearing loss, do not use values from any other frequency. You must take the sum of the three values and divide by three. When an audiometric test is to be performed on a driver with hearing aids, it must be an open field audiometric test which allows the driver to use their hearing aids, without the use of the standard headphones.

INTERNATIONAL ORGANIZATION for STANDARDIZATION (ISO)

Medical Examiners must know how to convert ISO units into ANSI units

- Subtract 14 from the 500Hz reading
- Subtract 10 from the 1000Hz reading
- Subtract 8.5 from the 2000Hz reading
- Replace any negative number resulting from the subtraction with 0
- Calculate the sum of the readings from the three categories, then divide this number by 3

	RIGHT EAR			LEFT EAR		
	500Hz	1000Hz	2000Hz	500Hz	1000Hz	2000Hz
ISO:	10dB	20dB	50dB	45dB	50dB	45dB
	<u>-14</u>	<u>-10</u>	<u>-8.5</u>	<u>-14</u>	<u>-10</u>	<u>-8.5</u>
ANSI:	(-4) 0	10	41.5	31	40	36.5
	51.5dB / 3 = 17.2dB			107.5dB / 3 = 35.8dB		

Some hearing tests may report values in International Organization for Standardization (ISO) units. These values must be converted into ANSI equivalent values and medical examiners must know how to perform this conversion. To do this, subtract 14 from the 500Hz ISO value, 10 from the 1000Hz ISO value, and 8.5 from the 2000Hz ISO value. If the results of any of these calculations results in a negative number, the ME replaces the value with a zero for that frequency. The three frequency values are then added together and divided by 3. This results in the ANSI hearing loss value. In this example, the hearing loss of both ears is equal to or below 40, indicating that both ears pass the hearing requirement.

HEARING AIDS

Regardless of the specific function or cost of a hearing device, if the driver passes the whisper test or audiometric testing while using the device, it is acceptable.



- The device must not interfere with safe driving, such as loss of peripheral vision
- The driver must wear the device while driving
- The driver must carry a spare battery or spare hearing aid while driving



There are many different styles of hearing aids. Some fit within the ear, some have microphones or amplifiers outside of the ear. Some are designed specifically for hunting or for highly directional sound detection. Regardless of the specific function or cost of a hearing device, if the driver passes the whisper test or audiometric testing while using the device, it is acceptable, provided the device does not interfere with safe driving, such as loss of peripheral vision. The driver must wear the device while driving and must carry a spare battery or spare hearing aid.

COCHLEAR IMPLANTS



Cochlear implants are an acceptable option for meeting the hearing standard

- Bypasses damaged portions of the ear to deliver sound signals to the auditory nerve
 - It takes time and training to learn to interpret the signals received from a cochlear implant
 - Within a year of use, most people with cochlear implants make considerable gains in understanding speech

A cochlear implant is an electronic device that partially restores hearing. Unlike hearing aids, which amplify sound, a cochlear implant bypasses damaged portions of the ear to deliver sound signals to the auditory nerve. The brain interprets those signals as sounds, though these sounds won't be just like normal hearing. It takes time and training to learn to interpret the signals received from a cochlear implant. Within a year of use, most people with cochlear implants make considerable gains in understanding speech. Cochlear implants are an acceptable option for drivers to meet the hearing standard.

FEDERAL HEARING EXEMPTION

When the driver fails the hearing standard:

- Ask the driver if they want to apply for a Federal or State Hearing Exemption
 - If not, they are disqualified from driving
 - If they do:
 - Check “Meets Standards but periodic monitoring required” and write in “Hearing”
 - Check the “other” box and write in “2 years” (if they are otherwise qualified for 2 years) on the exam report form
 - On both the exam form and medical Certificate, check the box “Accompanied by waiver/exemption” and write “Federal Hearing” in the blank space
 - The box for “wearing hearing aid” should NOT be marked on the form or the certificate

When a driver fails the hearing standard, the medical examiner should ask the driver if they are interested in applying for the hearing exemption. If not, the driver is disqualified. The ME marks does not meet standards and writes “hearing” in the space provided then gives the driver a copy of the medical exam form but does not issue the driver a Medical examiner’s certificate.

If the driver is interested in applying, the ME completes the physical exam and checks “Meets Standards but periodic monitoring required due to”, then writes in “hearing”. The next line asks the duration the driver is qualified for. Check the “other” bullet and write in 2 years. Then on the next line, check the box “Accompanied by a waiver/exemption”, and in the blank space provided, write “Federal Hearing”. The same sequence of completion is used for the medical examiner’s certificate. The box for “wearing hearing aid” should NOT be marked on the form or the certificate.

MEs can provide the driver a copy of the hearing exemption application. Tell the driver they cannot drive until they have their Federal (or State) hearing exemption.

THE EAR EXAM

Changes, balance, ringing, dizziness?

Visualization of the Tympanic membrane

Examine and Discuss:

- Tympanic Scarring
- Occlusion of ear canal
- Perforated membrane
- Any abnormalities



Ask the driver if they have had any changes in hearing, balance, dizziness or ringing in the ear. An External and otoscopic examination, including visualization of the Tympanic membrane is required. If needed, ear wax can be removed. Discuss with the driver any abnormal findings such as tympanic scarring, occlusion of ear canal, or perforated membrane.

PRACTICE SCENARIO

A 54-year-old male with “Yes” response to “Loss of hearing”. No other significant medical history

- Hearing Exam (No hearing aide):
 - Whisper test:
 - Right = 5 feet
 - Left = 3 feet

Should this driver be certified or disqualified Why?

If he is to be certified, for how long?

What if the whisper test results were 4 feet on the right and 3 feet on the left?

A 54-year-old male responds “Yes” to “Loss of hearing”. No other significant medical history. His hearing exam without a hearing aide was of the whisper test. This resulted in the right ear hearing the whisper at a distance of 5 feet and the left ear hearing the whisper at a distance of 3 feet. Should this driver be certified or disqualified Why? If he is to be certified, for how long? What if the whisper test results were 4 feet on the right and 3 feet on the left?

PRACTICE SCENARIO ANSWER

The driver meets the hearing standard in one ear which is all that is required. The best outcome is to certify the driver for a period of **two years**.

If whisper test results were 4 feet on the right and 3 feet on the left, the driver would require audiometry.

The driver meets the hearing standard in one ear which is all that is required. The best outcome is to certify the driver for a period of two years. If the whisper test results were 4 feet on right and 3 feet on the left, the driver may still be able to meet hearing requirements through audiometric testing.



This is the end of Module 2.